INDIANA DEPARTMENT OF TRANSPORTATION

STANDARDS COMMITTEE MEETING AGENDA

Driving Indiana's Economic Growth

January 26, 2006

MEMORANDUM

TO: Standards Committee

FROM: Dannie L. Smith, Secretary

RE: Agenda for the February 16, 2006 Standards Committee Meeting

A Standards Committee meeting is scheduled for 9:00 a.m. on February 16, 2006 in the N755 Bay Window Conference Room. Please enter the meeting through the double doors directly in front of the conference room. The following agenda items are listed for consideration.

New Business

Item 9-1 105.06	Mr. Cales Cooperation with Utilities	2/16/06 100-35	3
Item 9-2 206.11(a)	Mr. Cales Culverts and Retaining Walls	2/16/06 200-61	4
Item 9-3 Standard Drawings	Mr. VanCleave 610-DRIV-13 610-PRAP-04, 08, & 11	2/16/06	5
Item 9-4 610.06	Mr. Cales Basis of Payment	2/16/06 600-33	13
Item 9-5 714.07	Mr. Cales Method of Measurement	2/16/06 700-104	15
Item 9-6 714.08	Mr. Cales Basis of Payment	2/16/06 700-104	16
Item 9-7 Design Manual	Mr. Cales Section 17-4.05(02)	2/16/06	17
Item 9-8 801.17	Mr. Cales Method of Measurement	2/16/06 800-17	25

Item 9-9	Mr. Cales	2/16/06	26
801.18	Basis of Payment	800-19	
Item 9-10	Mr. Miller	2/16/06	27
923.02	Temporary Raised Pavement Marker	900-210	
~~923.02(a)~~	~~Optical Requirements~~	900-210	
~~923.02(b)~~	~~Strength Requirements~~	900-211	
~~923.02(c)~~	~~Adhesive~~	900-212	
~~923.02(d)~~	~~Acceptance Evaluation~~	900-212	
Item 9-11	Mr. Miller	2/16/06	31
923.07	*Acceptance of Temporary Traffic Control Devices*	900-219	

cc: Committee Members (7)
Districts (28)
FHWA (3)
ICI Representative (1)
IMAA Representative (1)
APAI Representative (1)
ACEC Representative (1)
ADS Representative (1)
Mirich Representative
ACPA Representative (1)
Contech Representative (1)
IKO Representative (1)
Bridgetek Representative (1)
INDOT Toll Road (3)
Traffic Design (3)
Estimators (3)
Specification Writers (4)

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 105, BEGIN LINE 160, DELETE AS FOLLOWS:

The contract documents ~~in 107.25~~ identify each known utility and describe all known necessary work and an anticipated schedule for completion. However, if a utility

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y___ N___ By - Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 206, BEGIN LINE 389, DELETE AND INSERT AS FOLLOWS:

(a) Culverts and Retaining Walls

This requirement will not include pipe culverts. Except as otherwise provided herein, excavation for culverts ~~and retaining walls~~ will not be paid for directly. The cost thereof shall be included in the cost of the class of concrete used therein. The cost of all necessary removal and satisfactory disposal of all or part of the existing old structure unless its removal is otherwise provided for, cleaning out an old channel or constructing a new channel within the right-of-way limits and widening it to the grade of the existing or proposed new stream bed as shown on the plans or as directed, construction of all necessary curbs and cofferdams and their subsequent removal, subsoil borings or soundings below bottom of footings, dewatering, disposal of excavated materials, and all labor, equipment, tools, and necessary incidentals shall be included in the cost of this work.

Other sections containing specific cross references: 714.08 Pg 700-104	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: 731-R-202 732-R-310 732-R-433 735-R-468	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 9-3
Mr. VanCleave
Date: 2/16/06

REVISION TO 2006 STANDARD DRAWINGS

610-DRIV-13, DRIVES
610-PRAP-04, PUBLIC ROAD APPROACH TYPE A & B
610-PRAP-08, PUBLIC ROAD APPROACH TYPE C
610-PRAP-11, PUBLIC ROAD APPROACH TYPE D

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Additional or Revision Frequency Manual Update Required? Y____ N____ By – Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: See Above
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

GENERAL NOTES :

① These notes apply to Standard Drawings E 610-DRIV-01 through 12.

2. If a PCCP approach is designed for a class II or class IV drive, the radii shall be constructed using ear construction type C as detailed on Standard Drawing E 605-ERCN-02.

③ When the maximum approach grade of ±10% does not meet the grade of the existing drive before the R/W line, the approach grade of ±10% shall extend beyond the R/W to the point of intersection with the existing driveway grade. Construction beyond the R/W line shall be done in temporary R/W.

④ The appropriate pipe end treatment should be provided for pipes located either inside the clear zone or outside the clear zone.

⑦ The maximum algebraic difference in grades shall not exceed 8% for crested grade nor 12% for sagged grades for Types I and III drives, nor 11% for crested grade and 14% for sagged grades for Types II, IV, and V drives.

⑧ The minimum driveway pavement sections for Class VI and Class VII Drives have been designed for 200 trucks per day. If the truck traffic count is greater than 200 per day, the required pavement section shall be as shown elsewhere on the plans.

~~⑪ No earth cover over culvert or pipe shall be 1 ft or greater.~~

⑫ Curb ramp type H, as shown on Standard Drawing E 604-SWCR-09, when the approach is signalized, or a sidewalk elevation transition as shown on Standard Drawing E 604-SDWK-02 shall be used when sidewalk is adjacent to curb.

⑬ When X is equal to or greater than 2 ft but less than 6 ft, either a curb ramp type G as shown on Standard Drawing E 604-SWCR-09, when the approach is signalized, or a sidewalk elevation transition as shown on Standard Drawing E 604-SDWK-01 shall be used.

⑭ When X is equal to or greater than 6 ft, no curb ramp or sidewalk elevation transition is required unless the curb height is in excess of 6 inches.

~~⑮ Driveway embankment slope within the clear zone for a road functionally classified as follows shall be:~~
~~a.) 6:1 for an arterial or a high speed (50 mph or greater design speed) collector.~~
~~b.) 4:1 for a local road or a low speed (less that 50 mph design speed) collector.~~

⑪ See Standard Drawing E 610-DRIV-14 for shoulder treatment at driveways.

⑮ Embankment slopes within the mainline clear zone for new construction/reconstruction projects or within the obstruction-free zone for 3R projects should be as shown in the table on Standard Drawing E 610-PRAP-04. Outside the clear zone or the obstruction-free zone, the embankment slopes should desirably be 4:1 but not steeper than 3:1.

LEGEND

⑤ ½ in. preformed joint filler
⑥ Monolithic curb
⑨ Longitudinal joint
Ⓕ Concrete sidewalk
Ⓢ For type and thickness equivalent to surface in place, see plans.

X = Distance between face of curb and sidewalk
W = Width of sidewalk
PCCP
Curb ramp, if signalized, or typically, sidewalk elevation transition.
Curb ramp or sidewalk elevation transition section view.

INDIANA DEPARTMENT OF TRANSPORTATION
DRIVES
GENERAL NOTES AND LEGEND
~~MARCH 2006~~
STANDARD DRAWING NO. E 610-DRIV-13

RICHARD L. VONCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L. VonCleave 3-01-06
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-01-06
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES

These notes are for Standard Drawings E 610-PRAP-02, -03, and -05.

for new construction/reconstruction projects or the obstruction-free zone on 3R projects should conform to the following table:

① Embankment slopes built on either side of the approach within the mainline clear zone shall be based on the functional classification of the public road as follows: or drive

ROAD CLASSIFICATION	DESIGN SPEED mph	DESIGN YEAR ADT	SLOPE
All Freeways and other Multi-Lane Divided Highways	All	All	10 : 1
Other roadways	≥ 55	≥ 6000	10 : 1
	≥ 55	< 6000	6 : 1
	≥ 45 to < 55	All	6 : 1
	< 45	≥ 12000	6 : 1
	< 45	< 12000	4 : 1

REVISE TO NEW FORMAT & VALUES

Outside the clear zone or the obstruction-free zone, the embankment slopes should desirably be 4:1 but not steeper than 3:1.

2. Cross culverts under the public road approach which cannot be located outside the mainline clear zone will require appropriate end treatments.

④ The cross hatched [XXXX] shoulder area indicates the limits where the shoulder is the same as the approach pavement.

5. If the approach is to be constructed of PCCP, the details shall be as shown elsewhere in the plans for thickness, joint type, and location.

⑥ Earth shoulder shall be used with the Type A public road approach. The Type B public road approach shall have 6 in. compacted aggregate and full approach pavement section shoulders as shown on the Type A approach detail.

⑦ If the ADT for the public road is greater than 1000, the required pavement section shall be as shown elsewhere in the plans.

INDIANA DEPARTMENT OF TRANSPORTATION

PUBLIC ROAD APPROACH
TYPE A & B - GENERAL NOTES

~~MARCH 2006~~

STANDARD DRAWING NO. E 610-PRAP-04

RICHARD L. VanCLEAVE REGISTERED No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L. VanCleave 3-06
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K. Smutzer 3-06
CHIEF HIGHWAY ENGINEER DATE

Replace table on E 610-PRAP-04 with this table

Design Speed		High, ≥ 80 km/h (≥ 50 mph)		Low, ≤ 70 km/h (≤ 45 mph)
Design Year AADT		≥ 6000	< 6000	All
Multi-Lane Divided, All Functional Class.	Incoming Slope	10:1	10:1	10:1
	Outgoing Slope	4:1	4:1	4:1
Multi-Lane Undivided, All Functional Class.	Incoming Slope	10:1	6:1	6:1
	Outgoing Slope	4:1	4:1	4:1
2-Lane Arterial or Collector		6:1	6:1	4:1
2-Lane Local Road		4:1	4:1	4:1

Notes:

1. *The table applies to driveways or public road approaches.*
2. *Incoming or outgoing slope is with respect to the adjacent travel lane's direction of traffic.*
3. *Each culvert end within the clear zone should have* an appropriate end treatment ~~*a grated end section*~~*, which is placed on a slope no steeper than shown above.*
4. *Both transverse median slopes at a crossover or a ditch check should be 10:1 without regard to design speed, design year AADT, or functional classification.*

TRANSVERSE SLOPES

Figure 49-3A

This change affects the following:

Design Manual Fig. 49-3A
Std. Dwg. 610-DRIV-13
Std. Dwg. 610-PRAP-04
Std. Dwg. 610-PRAP-08
Driveway Permits Manual

[F:\Des\05PRAD.doc]

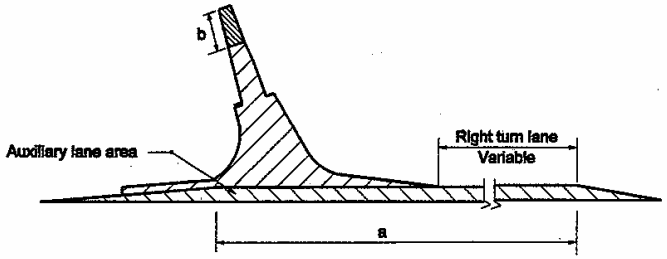
GENERAL NOTES

These notes are for Standard Drawings
E 610-PRAP-06 and E 610-PRAP-09.

See table on Standard Drawing E 610-PRAP-04 for slope

(1) Embankment slopes built on either side of the approach ~~within the mainline clear zone shall be based on the functional classification of the public road as follows:~~

ROAD CLASSIFICATION	DESIGN SPEED mph	DESIGN YEAR ADT	SLOPE
All Freeways and other Multi-Lane Divided Highways	All	All	10 : 1
Other roadways	≥ 55	≥ 6000	10 : 1
	≥ 55	< 6000	6 : 1
	≥ 45 to < 55	All	6 : 1
	< 45	≥ 12000	6 : 1
	< 45	< 12000	4 : 1



PAY LIMITS

2. Cross culverts under the public road approach which cannot be located outside the mainline clear zone will require appropriate end treatments at each end as shown on the plans.
3. If the approach is to be constructed of concrete, the details shall be as shown elsewhere in the plans for pavement thickness, joint type, and location.
(4) The cross hatched ▨ shoulder area indicates the limits where the shoulder is the same section as the approach pavement.
(5) The pavement section for the auxiliary lane shall be as detailed elsewhere in the plans.
(6) If the ADT for the public road is greater than 1000, the required pavement section shall be as shown elswhere in the plans.
7. See Standard Drawing E 610 - PRAP - 07 for pay limit details.

INDIANA DEPARTMENT OF TRANSPORTATION

PUBLIC ROAD APPROACH TYPE C - GENERAL NOTES

~~MARCH 2006~~

STANDARD DRAWING NO. E 610-PRAP-08

RICHARD L. VANCLEAVE REGISTERED No. 9750 STATE OF Indiana PROFESSIONAL ENGINEER
DESIGN STANDARDS ENGINEER

/s/ Richard L VanCleave 3-1-06
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K Smutzer 3-14-06
CHIEF HIGHWAY ENGINEER DATE

GENERAL NOTES

These notes are for Standard Drawings E 610-PRAP-10 and E 610-PRAP-12.

1. Standard Drawings E 610-PRAP-10 and -12 are for intersection control angle 70° to 110°.
   If intersection control angle is less than 70° or greater than 110° a special design will be required.
2. See Table on Standard Drawing E 610-PRAP-04-for Embankment slopes built on either side of the approach ~~within the mainline clear zone shall be based on the functional classification of the public road as shown on Standard Drawing E 610-PRAP-08.~~
3. Cross culverts under the public road approach which cannot be located outside the mainline clear zone will require an appropriate end section at each end.
4. If the existing pavement is asphalt the transition area shall be the same section as the approach and will be included in the pay limits for HMA for Approaches.
5. The cross hatched ⊠ shoulder area indicates the limits where the shoulder is the same as the approach pavement.
6. If the approach is to be constructed of PCCP, the details shall be as shown elsewhere in the plans for pavement thickness, joint type, and location.
7. If the Class V or above truck count for the public road approach is greater than 50 per day, the required pavement section shall be as provided elsewhere in the plans
8. The pavement section for the turn lane shall be as shown elsewhere in the plans.

TABLE A

MINIMUM LENGTH OF TURNING LANES (excluding taper), ft.

Design speed (m.p.h.)	Downgrade slope in %					Upgrade slope in %				
	6 to 5	4.99 to 4	3.99 to 3	2.99 to 2.01	2 to 0	0 to 2	2.01 to 2.99	3 to 3.99	4 to 4.99	5 to 6
40	400	380	355	325	295	295	280	265	250	235
50	550	520	485	445	405	405	385	365	345	325
60	675	640	600	555	500	500	475	450	425	400
65	730	690	650	595	540	540	515	485	460	435
70	800	755	710	650	590	590	560	530	505	475

INDIANA DEPARTMENT OF TRANSPORTATION

PUBLIC ROAD APPROACH TYPE D GENERAL NOTES AND TABLE A

~~MARCH 2006~~

STANDARD DRAWING NO. E 610-PRAP-11

REGISTERED R. RICHARD L. VANCLEAVE No. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER

DESIGN STANDARDS ENGINEER

/s/ Richard L VanCleave 3-31-06
DESIGN STANDARDS ENGINEER DATE

/s/ Richard K Smutzer 3-31-06
CHIEF HIGHWAY ENGINEER DATE

INDIANA DEPARTMENT OF TRANSPORTATION

INTER-DEPARTMENT COMMUNICATION

Standards Section – Room N642

Writer's Direct Line
233-2273

January 13, 2006 DRAFT

DESIGN MEMORANDUM No. 06-__
TECHNICAL ADVISORY

TO: **All Design, Operations, and District Personnel, and Consultants**

FROM: _____
Anthony L. Uremovich
Design Policy Engineer
Contract and Construction Division

SUBJECT: **Grading for Public Road Approaches and Drives**

SUPERSEDES: ***Indiana Design Manual*** **Section 46-11.02(05) and Figure 49-3A**

EFFECTIVE: **_____, 2006, Letting**

Transverse embankment slopes within the mainline clear zone for a new-construction/reconstruction project, or within the obstruction-free zone for a 3R project, should be as shown in Figure 06-__A, Transverse Slopes Within Clear Zone or Obstruction-Free Zone. Outside or beyond the clear zone or obstruction-free zone, the embankment slopes should desirably be 4:1, but should not be steeper than 3:1.

Design Speed		High, ≥ 80 km/h (≥ 50 mph)		Low, ≤ 70 km/h (≤ 45 mph)
Design Year AADT		≥ 6000	< 6000	All
Multi-Lane Divided, All Functional Class.	Incoming Slope	10:1	10:1	10:1
	Outgoing Slope	4:1	4:1	4:1
Multi-Lane Undivided, All Functional Class.	Incoming Slope	10:1	6:1	6:1
	Outgoing Slope	4:1	4:1	4:1
2-Lane Arterial or Collector		6:1	6:1	4:1
2-Lane Local Road		4:1	4:1	4:1

Notes:

1. *This table should be applied to each public road approach, drive, median crossover, or ditch check (dam).*

2. *Incoming or outgoing slope orientation is with respect to the adjacent travel lane's direction of traffic.*

3. *Each culvert end within the clear zone or obstruction-free zone should have an appropriate end treatment, which is placed on a slope not steeper than shown above.*

4. *Both transverse median slopes at a crossover or a ditch check (dam) should be 10:1 without regard to design speed, design year AADT, or functional classification.*

TRANSVERSE SLOPES WITHIN CLEAR ZONE
OR OBSTRUCTION-FREE ZONE

Figure 06-__A

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 610, BEGIN LINE 52, DELETE AND INSERT AS FOLLOWS:

610.06 Basis of Payment

The accepted quantities of HMA mixture for approaches will be paid for at the contract unit price per ton (megagram) of the type specified, complete in place. Compacted aggregate base will be paid for in accordance with 301.10. PCCP for approaches will be paid for at the contract unit price per square yard (square meter) *of the thickness specified*, complete in place.

HMA patching will be paid for in accordance with 304.07. PCCP patching will be paid for in accordance with 305.07.

Prime coat will be paid for in accordance with 405.10. Tack coat will be paid for in accordance with 406.07. Seal coat will be paid for in accordance with 404.10.

The quantities of materials placed on the 3 ft (1 m) wedge on approaches, when placed with the mainline pavement shall be included in the mainline HMA items and paid for in accordance with 401.22 or 402.20. The quantities, when placed separately from the mainline pavement, shall be included in the quantities for HMA for approaches and paid for in accordance with 610.06.

The quantities of materials for the paving or resurfacing of turn lanes, passing lanes, acceleration lanes, deceleration lanes, and recovery lanes greater than 100 lft (30 m), excluding tapers, shall be included in the mainline quantities and paid for in accordance with 401.22, 402.20, 501.31, or 502.23 whichever is applicable.

The accepted quantities of HMA material for mailbox approaches will be included with quantities required to construct the shoulder section when the shoulder is to be paved. If the shoulder is not to be paved, the HMA material for mailbox approaches will be paid for as HMA mixture for approaches *of the type specified*.

Payment will be made under:

Pay Item	**Pay Unit Symbol**
HMA for Approaches, Type __*__	TON (Mg)
PCCP for Approaches, _____ *thickness*	SYS (m2)

* Mixture type in accordance with 402.04.

The cost of excavation, shaping, leveling, forming, compaction, placing, and all necessary incidentals shall be included in the cost of the pay items in this section.

~~The cost of the 3 ft (1 m) wedge placed on approaches at the same time and in conjunction with the mainline HMA intermediate or surface, or if turn lanes, passing lanes, acceleration lanes, deceleration lanes, or recovery lanes are greater than 100 ft (30 m) longitudinally, payment will be made at the same unit price as for the material placed on the mainline.~~

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 610 CONTINUED.

The cost for curbing placed monolithically with the PCCP ~~for~~ *on* approaches shall be included in the cost of PCCP for approaches.

Other sections containing specific cross references: 713.09 Pg 700-101	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y___ N___ By - Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 714, BEGIN LINE 86, INSERT AS FOLLOWS:

714.07 Method of Measurement

Concrete used in retaining walls, culverts, and culvert extensions will be measured in accordance with 702.27. Reinforcing steel will be measured in accordance with 703.07. Precast reinforced concrete box sections and precast reinforced concrete box section extensions will be measured by the linear foot (meter), complete in place. *Common excavation for retaining walls will be measured by the cubic yard (cubic meter) to the neat lines shown on the plans.* Structure backfill *and B borrow for retaining walls* will be measured in accordance with 211.09 *to the neat lines shown on the plans*. Field drilled holes will be measured in accordance with 702.27.

Other sections containing specific cross references:

None

General Instructions to Field Employees
Update Required? Y___ N___
By - Additional or Revision
Frequency Manual
Update Required? Y____ N____
By – Addition or Revision

Recurring Special Provisions potentially affected:

731-R-202
732-R-310
732-R-433
735-R-468

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 714, BEGIN LINE 94, INSERT AS FOLLOWS:

714.08 Basis of Payment

The accepted quantities of concrete used in retaining walls, culverts, and culvert extensions will be paid for at the contract unit price per cubic yard (cubic meter) for concrete, of the class specified, structures. Reinforcing steel will be paid for in accordance with 703.08. Precast reinforced concrete box sections will be paid for at the contract unit price per linear foot (meter) for culvert, precast reinforced concrete box sections, of the size specified, complete in place. Precast reinforced concrete box section extensions will be paid for at the contract unit price per linear foot (meter) for culvert extension, precast reinforced concrete box sections, of the size specified, complete in place. *Excavation for retaining walls will be paid for at the contract unit price per cubic yard (cubic meter) to the neat lines shown on the plans in accordance with 203.28.* Structure backfill *and B borrow for retaining walls* will be paid for in accordance with 211.10 *to the neat lines shown on the plans*. Field drilled holes will be paid for in accordance with 702.28.

Other sections containing specific cross references:

717.09 Pg 700-124

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y___ N___
By - Addition or Revision

Recurring Special Provisions potentially affected:

731-R-202
732-R-310
732-R-453
735-R-468

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____

Received FHWA Approval? ____

Item No. 9-7
Mr. Cales
Date: 2/16/06

REVISION TO ROAD DESIGN MANUAL

SECTION 17-4.05(02)

Figure 05-25A, Cast-in-Place Concrete Retaining Wall Earthwork Quantities Limits.

Figure 05-25B, MSE Retaining Wall Earthwork quantities Limits.

Figure 05-25C, MSE Retaining Wall Earthwork Quantities Limits.

These figures along with the corresponding metric versions are being revised to reflect the limits of excavation.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y___ N___ By - Addition or Revision
Recurring Special Provisions potentially affected: 731-R-202 732-R-310 732-R-433 735-R-468	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

b. Reinforced Concrete Slab Bridge. Flowable backfill should be used to backfill behind an end bent as shown in the INDOT *Standard Drawings*. End bent drain pipes will not be required.

2. Interior Support.

a. Railroad or Roadway Grade Separation Structure. The area to a point 450 mm outside the neat lines of each footing should be backfilled with structure backfill as shown on the INDOT *Standard Drawings*. The neat line limits and estimated quantities should be shown on the Layout Sheet for each support location.

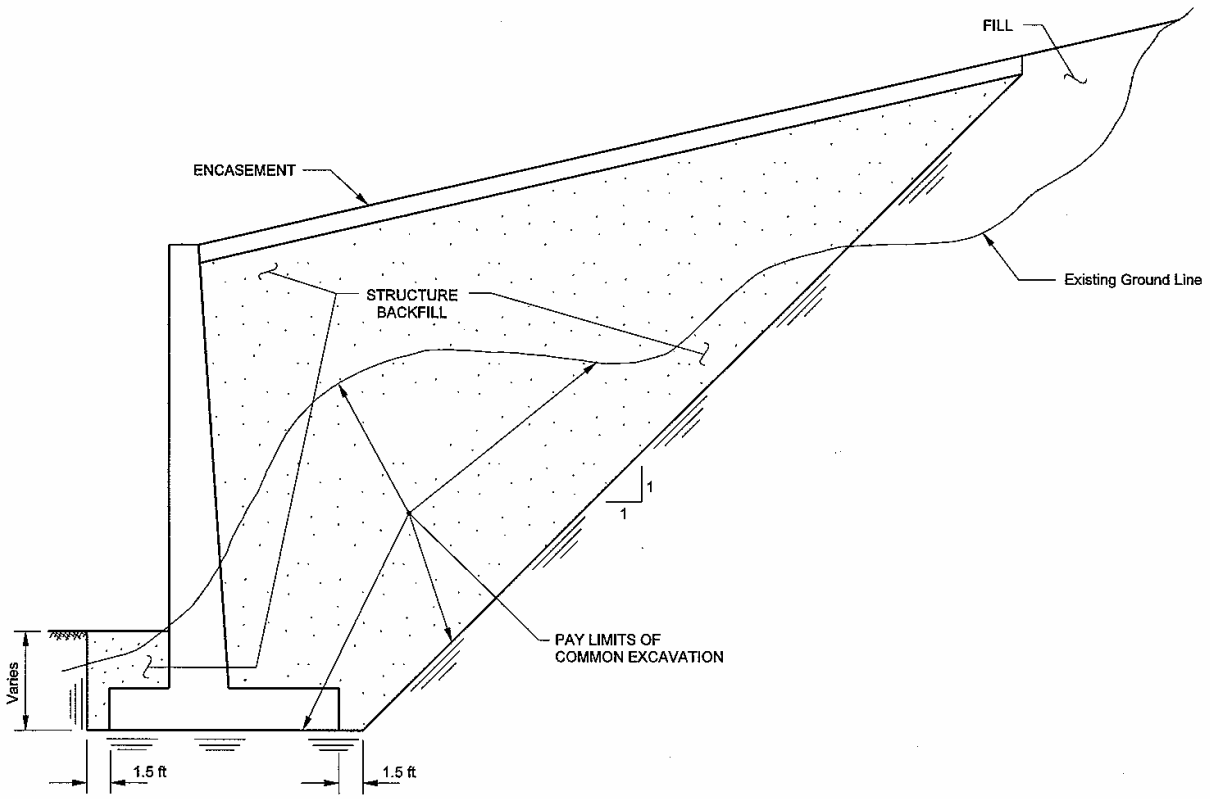
b. Bridge Over Waterway. The area to a point 450 mm outside the neat lines of each footing should be backfilled with common fill or borrow material.

17-4.05(02) Backfill for Retaining Wall

Chapter Sixty-eight provides the design criteria and warrants for the placement of retaining walls.

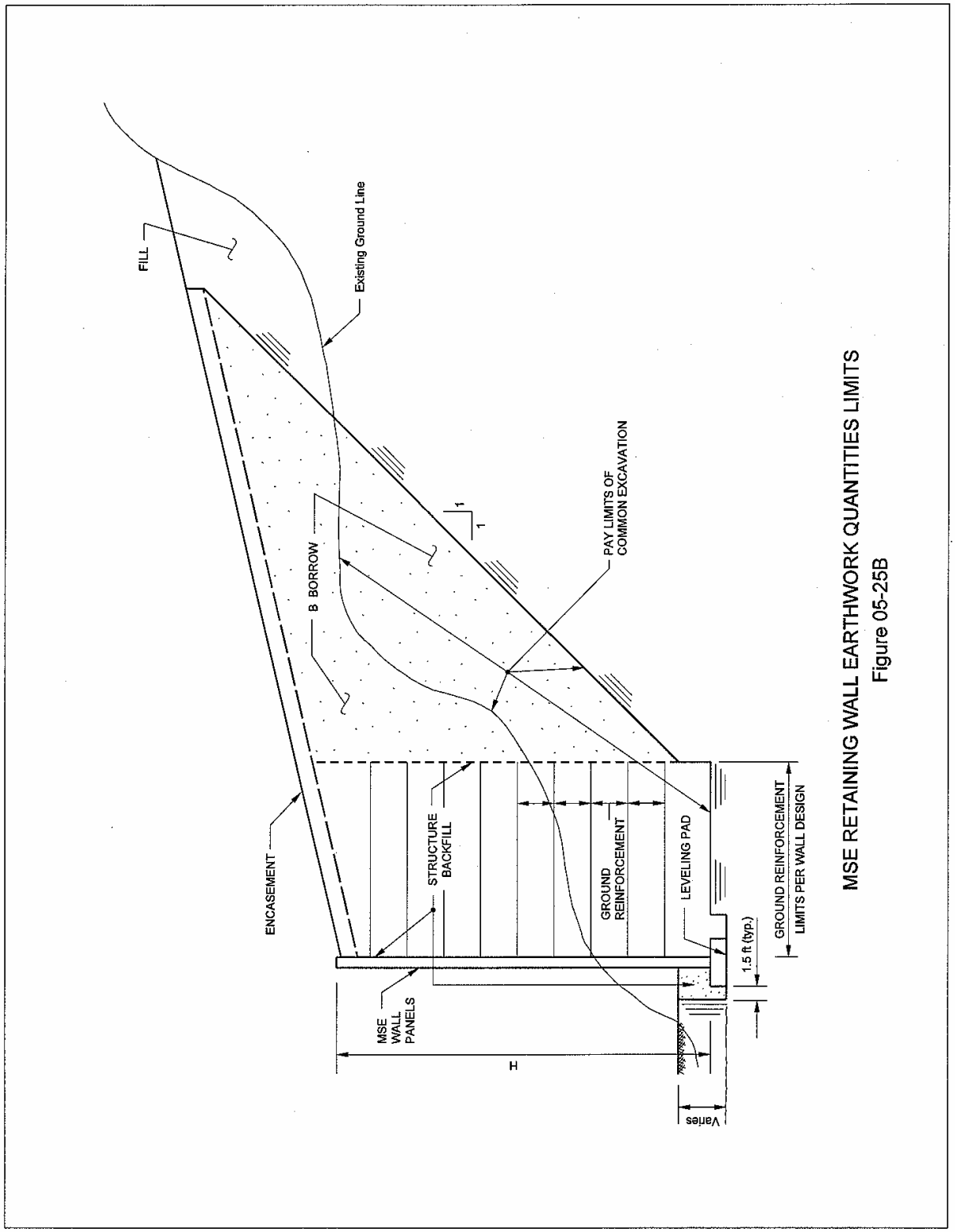
Figure 17-4B, Cast-in-Place Concrete Retaining Wall Earthwork Quantities Limits; Figure 17-4C, MSE Retaining Wall Earthwork Quantities Limits; and Figure 17-4D, MSE Retaining Wall Earthwork Quantities Limits Showing Foundation Treatment, each illustrate the typical pay limits for excavation and backfill material quantities for retaining walls. The contractor may select an alternate wall design. However, the earthwork quantities should be calculated based on the outermost neat-line construction limits for the wall type shown on the plans.

All excavation quantities required for placement of retaining walls should be incorporated into the project's earthwork quantities tabulation and balancing. The required pay items for a cast-in-place concrete wall are common excavation and structure backfill. The required pay items for an MSE wall are common excavation, structure backfill, and B borrow.



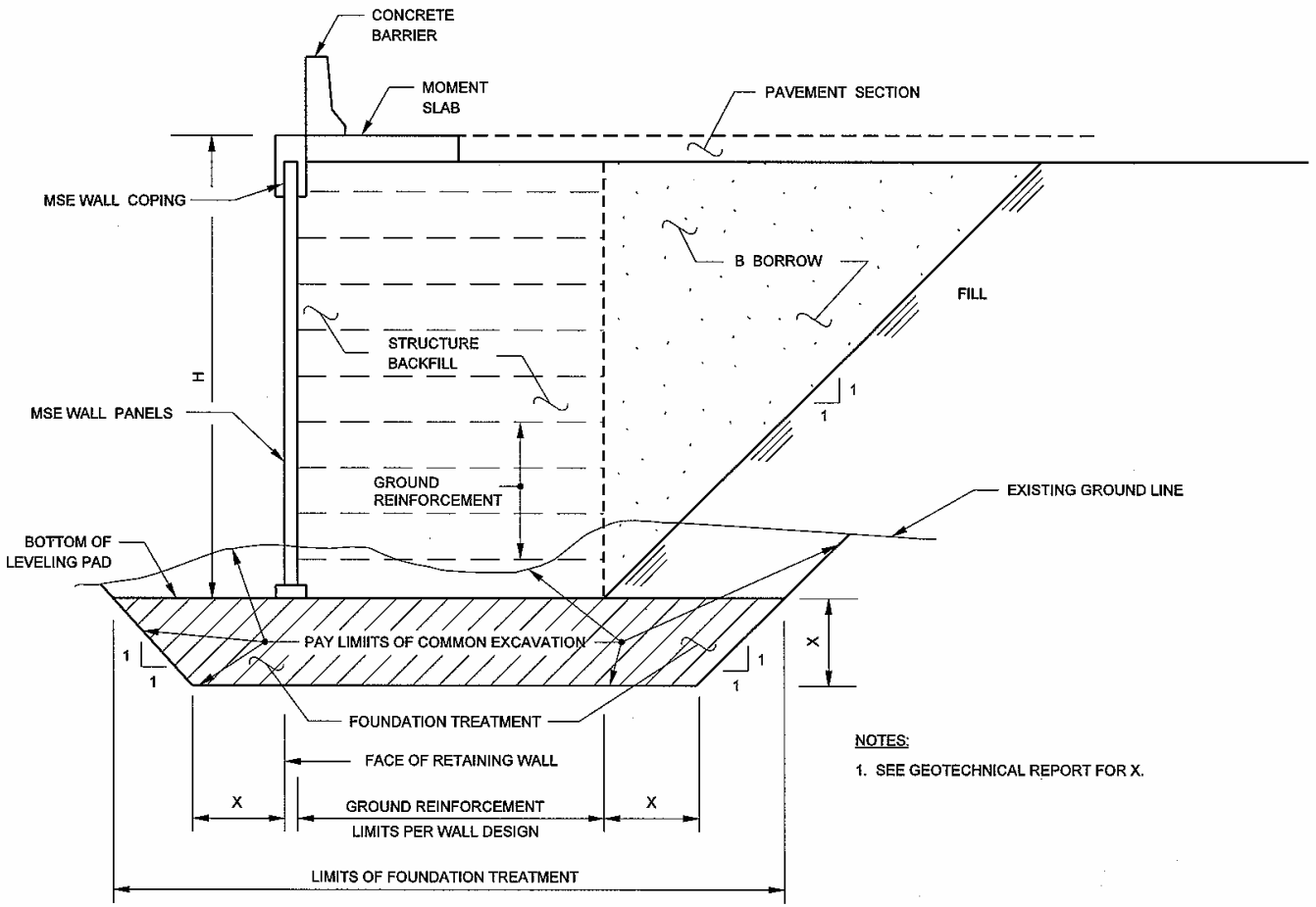
CAST-IN-PLACE CONCRETE RETAINING WALL EARTHWORK QUANTITIES LIMITS

Figure 05-25A

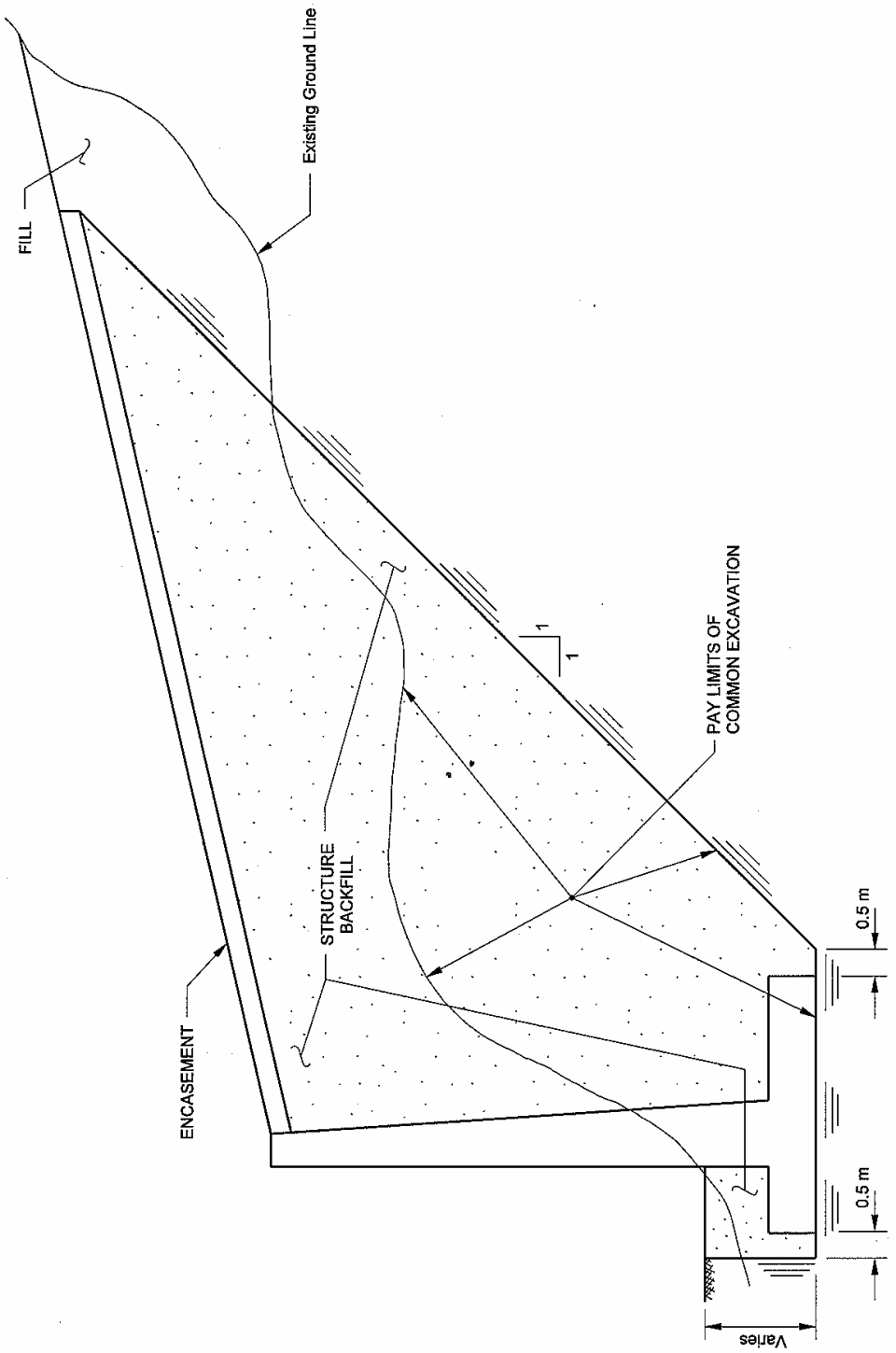


MSE RETAINING WALL EARTHWORK QUANTITIES LIMITS

Figure 05-25B

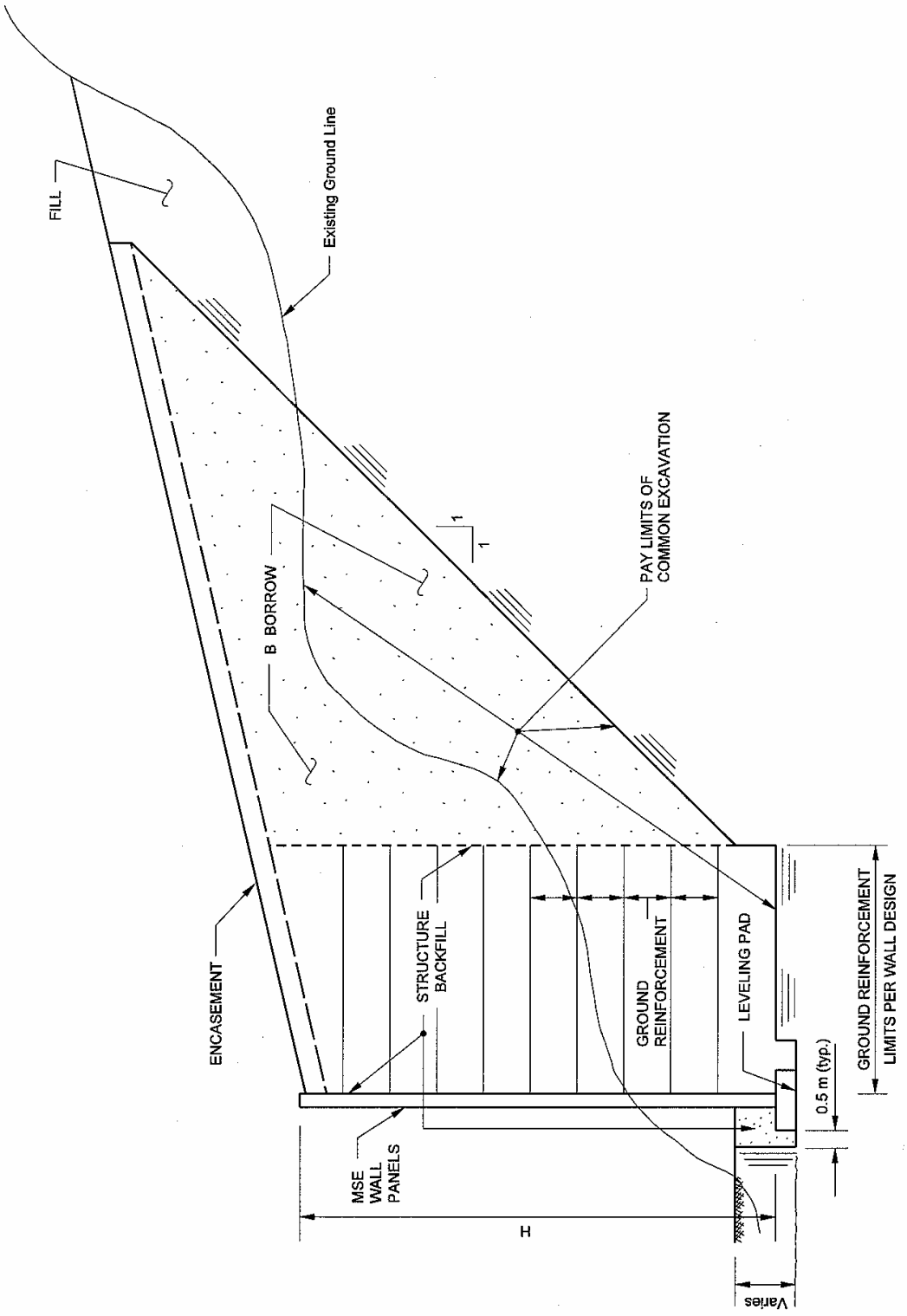


MSE RETAINING WALL EARTHWORK QUANTITIES LIMITS
(Showing Foundation Treatement)
Figure 05-25C



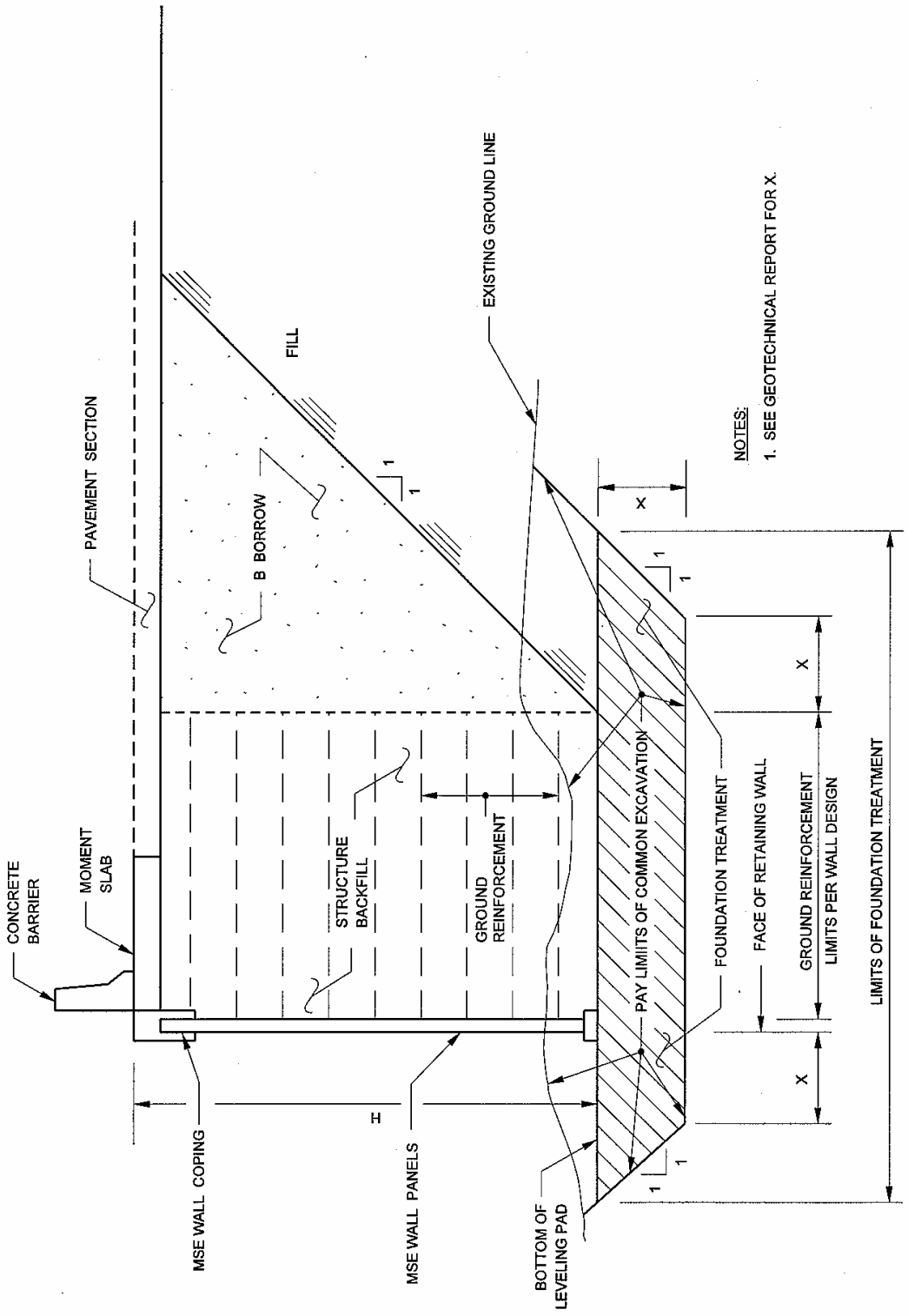
CAST-IN-PLACE CONCRETE RETAINING WALL EARTHWORK QUANTITIES LIMITS

Figure 17-4B



MSE RETAINING WALL EARTHWORK QUANTITIES LIMITS

Figure 17-4C



MSE RETAINING WALL EARTHWORK QUANTITIES LIMITS
(Showing Foundation Treatement)
Figure 17-4D

Item No. 9-8
Mr. Cales
Date: 2/16/06

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 801, BEGIN LINE 823, INSERT AS FOLLOWS:

Construction zone energy absorbing terminals, cz, *used on type 1 and type 3 temporary traffic barriers* will be measured by the number of terminals placed.

Other sections containing specific cross references:

408.07 Pg 400-38
507.09 Pg 500-47
713.08 Pg 700-101

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision

Frequency Manual
Update Required? Y___ N___
By - Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____
Received FHWA Approval? ____

Item No. 9-9
Mr. Cales
Date: 2/16/06

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 801, BEGIN LINE 887, INSERT AS FOLLOWS:

Construction zone energy absorbing terminal, cz *when used with type 1 or type 3 temporary traffic barriers* will be paid for at the contract unit price per each for energy absorbing terminal, cz, of the test level placed. Each unit will be paid for only once regardless of how many times it is moved. *Construction zone energy absorbing terminal, cz when used with type 2 or type 4 temporary traffic barriers will be paid for at the contract unit price per linear foot (meter) of type 2 or type 4 temporary traffic barrier.* Back-up units will be paid for as energy absorbing terminal, cz, of the test level placed, if they are placed in service due to non-repairable damage to the units already in service. Due to the nature of the TRACC-350 unit, the Engineer must agree that the in-service unit has been damaged to the extent that it is non-repairable before a standby TRACC-350 unit will be considered for payment.

Other sections containing specific cross references:

107.18 Pg 100-68
408.08 Pg 400-39
507.10 Pg 500-48
713.09 Pg 700-101

General Instructions to Field Employees
Update Required? Y___ N___
By - Addition or Revision
Frequency Manual
Update Required? Y___ N___
By - Addition or Revision

Recurring Special Provisions potentially affected:

None

Standard Sheets potentially affected:

None

Motion: Mr.
Second: Mr.
Ayes:
Nays:

Action: Passed as submitted; revised
Effective - _____ Letting
_____ Supplementals

Withdrawn. Resubmit? _____
Received FHWA Approval? ____

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 923, BEGIN LINE 41, DELETE AND INSERT AS FOLLOWS:

923.02 Temporary Raised Pavement Marker

Temporary pavement marker shall be affixed with adhesive to the pavement surface *and shall be in accordance with ASTM D4280*. ~~A temporary raised pavement marker shall consist of a shell, a reflective element, and an adhesive. The shell shall be black or the same color as the pavement marking being supplemented or replaced. The reflective element shall be either a reflective prismatic lens or reflective sheeting. A uni-directional marker shall meet the visual requirements of this specification when viewed from the front of the marker and a bi-directional marker shall meet the visual requirements when viewed from either direction. Two uni-directional markers placed back to back are an acceptable alternate for a bi-directional marker.~~

~~The dimensions of the front view of the marker shall be as follows.~~

~~DIMENSION~~	~~MINIMUM~~	~~MAXIMUM~~
~~Width of marker shell~~	~~3.8 in. (97 mm)~~	
~~Height of marker shell without adhesive~~	~~0.5 in. (13 mm)~~	
~~Height of marker shell with adhesive~~		~~1.0 in. (25 mm)~~
~~Area of prismatic lens reflecting surface~~	~~0.30 in.^{2} (194 mm^2)~~	
~~Area of sheeting reflecting surface~~	~~1.0 in.^{2} (645 mm^2)~~	

~~**(a) Optical Requirements**~~

~~The white and yellow reflective elements shall have the initial minimum reflectance values specified in the following tables when measured in accordance with ASTM E 809. The photometric characteristic to be measured shall be the coefficient of luminous intensity. This coefficient shall be expressed as candlepower per footcandle (candelas per lux). The entrance angle vertical component, Beta 1, shall be the clockwise angle formed from the vertical half plane, passing through the bottom front edge of the reflective element, to the face of the reflective element when viewed from the right side.~~

~~TABLE 1~~

~~REFLECTIVE SHEETING ELEMENT FOR GRADE 2 MARKERS~~

~~Observation Angle (degrees)~~	~~Entrance Angle Horizontal Component Beta 2 (degrees)~~	~~Coefficient of Luminous Intensity Candlepower/foot candle (candelas/lux)~~	
		~~White~~	~~Yellow~~
~~0.2~~	~~-4~~	~~1.0 (0.0929)~~	~~0.60 (0.0558)~~
~~0.5~~	~~-4~~	~~0.4 (0.0372)~~	~~0.24 (0.0223)~~

TABLE 2
REFLECTIVE SHEETING ELEMENT FOR GRADE 1 MARKERS

Observation Angle (degrees)	Entrance Angle Horizontal Component Beta 2 (degrees)	Coefficient of Luminous Intensity Candlepower/foot candle (candelas/lux)	
		White	Yellow
0.2	-4	1.00 (0.0929)	0.60 (0.0558)
0.5	+20	0.4 (0.0372)	0.24 (0.0223)
0.5	-4	0.4 (0.0372	0.24 (0.0223)

TABLE 3
REFLECTIVE PRISMATIC LENS ELEMENT

Observation Angle (degrees)	Entrance Angle Horizontal Component Beta 2 (degrees)	Coefficient of Luminous Intensity Candlepower/foot candle (Candelas/lux)	
		White	Yellow
0.2	+20	0.04 (0.00372)	0.24 (0.0223)
0.2	0	1.0 (0.093)	0.24 (0.0223)

The grade 2 marker does not require daytime visibility and target value. The shape, color, and finish of the grade 1 marker shall provide an adequate diffused specular daytime signal. A diffused specular daytime signal will be considered adequate when the area of the horizontal projection, as determined from a point of projection of the front view of the marker less the projected areas of the reflective element and non-specular materials, is a minimum of 144 in^2 (92 900 mm^2). A minimum of 96 $in.^2$ (61 900 mm^2) of this projection shall be attributable to that portion of the front view greater than 0.125 in. (3 mm) above the reference plane. For purposes of this requirement, the reference plane shall be the horizontal plane passing through the base of the marker and the point of projection shall be the point located 490 ft (149.4 m) horizontally in front of the marker and 42 in. (1.1 m) above the referenced plane.

(b) Strength Requirements

The marker shall withstand a 10,000 lb (44.5 kN) load without cracking or permanent deformation. The testing procedure shall consist of centering a marker between the flat paralleled platens of a compression testing machine. A flat piece of 50-60 Shore A durometer rubber 6 in. by 6 in by 3/8 in. (150 mm by 150 mm by 10 mm) shall be centered on top of the marker. The load shall be slowly applied through the rubber to the top of the marker. Failure shall constitute either cracking or permanent deformation of the marker at any load less than 10,000 lb (44.5 kN).

(c) Adhesive

The adhesive shall be compatible with the marker materials and shall not cause deterioration of the marker or concrete and HMA pavements. The three types of acceptable adhesives shall be a pre-applied pressure sensitive adhesive, and adhesive pad, or an asphalt adhesive.

The asphalt adhesive shall be used only on concrete pavement surfaces and on HMA pavement surfaces which receive an additional pavement course of at least 3/4 in. (19 mm) thickness.

~~Pre-applied pressure sensitive adhesive shall be pre-qualified for use from a field evaluation.~~

~~The adhesive pad shall be sized to fit the marker's dimensions and shall consist of pressure sensitive, 100% solids, approximately 0.04 in. (1.0 mm) thick, with closed cell release paper on each side. The pressure sensitive adhesive, when applied with a minimum application pressure of 60 psi (414 kPa), shall possess a minimum tensile or shear strength of 15 psi (103 kPa) at 70°F (21°C) ambient air temperature. An adhesive primer shall be used to promote optimum adhesion when the adhesive pad is placed on old asphalt or concrete surfaces that have one of more additional courses. The adhesive primer shall be as recommended by the manufacturer of the adhesive pad. The adhesive primer shall not be used on the surface course.~~

~~The asphalt adhesive shall be applied using an appropriate melter or applicator and shall be in accordance with the following.~~

~~CHARACTERISTIC~~	~~REQUIREMENT~~
~~Specific Gravity~~	~~1.80~~
~~Weight per cubic foot (Mass per cubic meter)~~	~~110 lb (1762 kg)~~
~~Flash point per ASTM D 92~~	~~509°F (265°C)~~
~~Bitumen content per ASTM D 2172~~	~~25 - 30%~~
~~Filler content (by subtraction)~~	~~70 - 75%~~
~~Filler particle size~~	~~Over 85% passing #200 (75 µm) mesh sieve~~
~~Penetration at 77°F (25°C) per ASTM D 5~~	~~12 ± 4~~
~~Softening point (Ring and Ball) per ASTM D 36~~	~~221°F ± 5°F (105°C ± 3°C)~~
~~Recommended pouring temperature~~	~~400 - 425°F (204 - 218°C)~~
~~Shelf life~~	~~2 years~~
~~Packing~~	~~Silicone lined cardboard boxes containing approximately 62 lb (28.1 kg) each~~

~~Note: Material shall not contain rubber polymers.~~

~~(d) Acceptance Evaluation~~

Markers shall be selected from the Department's list of approved Temporary Raised Pavement Markers. Temporary raised pavement markers will be placed and maintained on the approved list in accordance with ITM 806, *procedure XX*.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 923 CONTINUED.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y___ N___ By - Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____

Item No. 9-11
Mr. Miller
Date: 2/16/06

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 923, AFTER LINE 320, INSERT AS FOLLOWS:

923.07 Acceptance of Temporary Traffic Control Devices

Unless otherwise indicated, temporary traffic control devices will be accepted by visual inspection.

Other sections containing specific cross references: None	General Instructions to Field Employees Update Required? Y___ N___ By - Addition or Revision Frequency Manual Update Required? Y___ N___ By - Addition or Revision
Recurring Special Provisions potentially affected: None	Standard Sheets potentially affected: None
Motion: Mr. Second: Mr. Ayes: Nays:	Action: Passed as submitted; revised Effective - _____ Letting _____ Supplementals Withdrawn. Resubmit? _____ Received FHWA Approval? ____